

IOWA STATE UNIVERSITY

Digital Repository

Retrospective Theses and Dissertations

Iowa State University Capstones, Theses and
Dissertations

1-1-2001

Determinants of online hotel reservation system use

Jinran Chen
Iowa State University

Follow this and additional works at: <https://lib.dr.iastate.edu/rtd>

Recommended Citation

Chen, Jinran, "Determinants of online hotel reservation system use" (2001). *Retrospective Theses and Dissertations*. 21121.

<https://lib.dr.iastate.edu/rtd/21121>

This Thesis is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in Retrospective Theses and Dissertations by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.

Determinants of online hotel reservation system use

by

Jinran Chen

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of
MASTER OF SCIENCE

Major: Hotel, Restaurant, and Institution Management

Major Professor: Miyoung Jeong

Iowa State University

Ames, Iowa

2001

Graduate College
Iowa State University

This is to certify that the Master's thesis of

Jinran Chen

has met the thesis requirements of Iowa State University



Signatures have been redacted for privacy

To my parents and my wife for their endless love and support.

TABLE OF CONTENTS

CHAPTER 1. INTRODUCTION	1
CHAPTER 2. REVIEW OF LITERATURE	7
CHAPTER 3. METHODOLOGY	23
CHAPTER 4. RESULTS	27
CHAPTER 5. CONCLUSION AND SUGGESTIONS	38
APPENDIX A. SURVEY INSTRUMENT	44
APPENDIX B. HUMAN SUBJECTS REVIEW COMMITTEE APPROVAL	50
REFERENCES	52
ACKNOWLEDGMENTS	56

LIST OF FIGURES

Figure 2-1. Internet Users' Demographics	17
Figure 2-2. Technology Acceptance Model (TAM)	18
Figure 2-3. A Conceptual Framework for Measuring the Acceptance of Online Reservation Systems	20

LIST OF TABLES

Table 2-1. Number of Internet users	15
Table 4-1. Demographic characteristics of the respondents	28
Table 4-2. Analysis of Variance (ANOVA) and t test	30
Table 4-3. Means of the constructs	32
Table 4-4. Reliability analysis	34
Table 4-5. Correlation analysis of the five constructs	35
Table 4-6. Analysis of variance (ANOVA) table of regression model	37

CHAPTER 1. INTRODUCTION

Information technology (IT) has improved dramatically during past decades with the development of computer systems. The telecommunication transmission rate has grown from 64,000 bits per second in the late 1970s to over one billion bits per second today. The memory of a personal computer has also increased to over 1 gigabyte today, compared to 4,000 bits decades ago. The fast growth in IT can be seen almost everywhere.

IT has also been widely used in the hospitality industry. IT is being used to make reservations, support management decision-making, educate and train employees through computers, and satisfy customers' needs. In 1980, the American Hotel and Motel Association (AH&MA) reported that less than 10 percent of US lodging properties employed computer technology (Van Hoof, Verbeeten, and Combrink, 1996). In 2000, almost all the lodging properties used some types of computer technology, according to a survey conducted by Hotels magazine ("Hotels' 2001 worldwide technology survey," 2001).

Although most hotels in the United States have used some kinds of computer technology, the hotel industry has lagged far behind most other industries. The main reasons for this lag are the high cost of IT and the fact that IT is non-specific for hotels (Hensdill, 1998). Hotel operators have spent uncounted millions of dollars on implementation of computers and information systems, but they have not always achieved enhanced productivity from all those expenditures (David, Grabski, and Kasavana, 1996).

Recently, the Internet has been introduced in the hotel industry as a major leading IT. The Internet originated from the U.S. Ministry of Defense in 1969, and developed into a working tool for universities and researchers throughout the world. During the 1990s the

introduction of World Wide Web (hereafter the Web) generated big changes in the number of Internet users and information suppliers (Marcussen, 1997). The Web normally consists of text, color photos, and graphics. Some parts of the text, photos, or graphics can be hyper-linked to other sections of the same Web page or even other Web sites. Many promotional activities of countries, regions, organizations, and companies are presented through the Web (Marcussen, 1997).

The Web, providing users with multimedia and interaction, is changing the way people do business (Lambert and Reigel, 1992) and becoming the newest marketplace (O'Connor and O'Keefe, 2000). The new marketplace of the Web is characterized by ease of entry, relatively low set-up costs, globalness, time independence, and interactivity (Berthon, Pitt, and Watson, 1996). A number of organizations, large and small, situated in different countries have set up their Web sites for customers to visit. In 1998, approximately one and a half million new Web pages were established everyday (Korgaonkar and Wolin, 1999). An estimated 55 million people surf the Internet, and every 100 days the traffic doubles (Korgaonkar and Wolin, 1999). The Internet enables marketers to understand their customers better, and communicate with them more effectively, and provide new services to satisfy them.

Two thirds of the lodging companies in the United States have established their own Web sites (Van Hoof and Verbeenten, 1998). Van Hoof and Combrink (1997) stated that the size and type of the property are major factors that affect the use of the Web. They mentioned that the larger and more upscale hotels are, the more frequently hotels have Web pages. However, many hoteliers establish their Web sites simply because their competitors have Web sites (Kirk and Pine, 1998). Still, many lodging companies have concerns about

developing Web sites because of their unfamiliarity, data validity and security, development and maintenance costs, and unauthorized use by employees (Van Hoof and Combrink, 1997).

The Web is becoming a new marketplace. In 1998, the exchange of goods and services over the Internet were worth more than \$22 billion. Web sites can provide companies with better information, personalize their products to individual customers, shorten the supply chains, and speed up response time (Frew and Horam, 1999).

Today, a lot of products are being sold on the Internet. One of the most suitable products for sale via the Internet is the travel product. Making an online purchase decision is faster, easier, and more convenient, compared to calling a travel agent (O'Connor and Horan 1999). Many travel suppliers are actively engaged in Internet business (O'Connor and Horan, 1999). In 1997, 800 million online travel bookings were made, and the number will increase significantly over the next several years (O'Connor and Horan, 1999). The Travel Industry Association of America (TIA) (1997) predicts that six to ten percent of all travel reservations will be made via the Web by 2002. Van Hoof, Rurys, and Combrink (1999) found that most hotels had a Web site to allow their customers to make reservations. The future of online reservations is very promising. O'Connor and Horan (1999) stated online hotel room reservations will become a mainstream channel of distribution by the year 2005 because the number of online reservations will exceed those made through Central Reservation Systems.

Many customers want to find an approximate property, check room availability, review the rate, complete the booking, and receive a confirmation number on the Web in a single session (O'Connor and Horan, 1999). But Murphy, Forrest, Worting, and Brymer (1996) found that most hotel Web sites were not capable of meeting these customers' expectations. They found that while over half of the hotel Web sites offer users the option to

make reservations, less than half of them had a functioning reservation system. In the 36 sites they studied, only two offered a secure (encrypted) method to make payments via the Web.

Studies (e.g. Van Hoof, Collins, Combrink, and Verbeeten, 1995; Van Hoof et al., 1996; Van Hoof and Combrink, 1997; Van Hoof et al., 1999) attempted to find the hotel managers' perceptions toward IT and the Internet. A comparative study was designed to determine the perceptions of managers from three different countries, U.S., U.K., Canada (Van Hoof et al., 1996). Results of these studies show managers in general have positive perceptions of IT. However, according to HITA's 1998 survey, many managers who have worked with the Internet feel it has limited value as a reservation tool (Van Hoof and Verbeeten, 1998). Managers' opinions are less inspiring than the estimation by the Travel Industry Association of America.

Although managers' attitudes are different, their attitudes would not affect customers' purchase decision. It is customers' attitudes that influence their purchase behavior. Customers' attitudes toward the online reservation systems are crucial determinants of use of online booking facilities (Jeong and Lambert, 1999). However, little research has been reported to identify customers' perceptions of online reservation systems.

This study attempts to identify customers' perceptions of online reservation systems to help hoteliers improve their systems to improve customer satisfaction. Hoteliers can also determine if they should spend so much money in establishing a Web site with online reservation capabilities so that they can target these Internet users.

Specifically, this study attempts to:

1. determine factors influencing customers' use of online room reservation systems;

2. determine the relationships among customers' perceived usefulness (PU), perceived ease of use (PEOU), perceived accessibility (PA) of online reservations systems, attitude toward online reservation systems, intention to use online reservation systems, and the behavior of using online reservation systems;
3. examine if differences exist between customers who use the online reservation system and those who do not use.

Definitions of Terms:

Information Technology (IT): IT refers to the use of computing and communication technology to maximize benefits to all clients (Kirk and Pine, 1998).

Internet: Tens of thousands of private, commercial, educational, and government-supported computer networks around the world linked together (Kasavana and Cahill, 1997). The Internet is a new medium with interactivity that allows individuals and organizations to communicate directly with one another regardless of distance or time (Berthon, Pitt, and Watson, 1996).

World Wide Web (Web): A part of the Internet that offers an incredibly rich combination of text, images, sound, animation, and video (Kasavana and Cahill, 1997).

Global Distribution System (GDS): GDS can access travel and tourism inventories through direct linkage with the reservation systems of hotel, airline, car rental, and travel agency companies worldwide (Kasavana and Cahill, 1997).

Online Reservation System: Reservation is “a mutual agreement between the guest and the hotel, the former to take accommodations at a given time for a given period and the latter to furnish the same”(Vallen and Vallen, 1996). In this study, an online reservation system is the facility provided on the Web site where customers can make hotel room reservations.

CHAPTER 2. REVIEW OF LITERATURE

The purpose of this study is to better understand customers' online reservation behavior by identifying the relationships among their perceptions, their attitudes, their intentions, and their use of online reservation systems. This chapter reviews related literature on reservation systems, Global Distribution Systems, the World Wide Web, Information Technology, Internet users' demographics, and user behavior theory.

Conventional Reservation Systems

Traditionally, major methods of hotel reservations are telephone, telex, fax, letters, and computer systems. The telephone has been the primary reservation link between hotels and their customers for decades (Emmer, Tauck, Wilkinson and Moore, 1993). Guests either call a hotel directly or dial a toll-free number to make reservations. Before guests call to make a reservation, they often need to find information about lodging places from travel guides and indexes. The three-step process for room reservations, which includes searching, calling, and booking, is both time consuming and costly for customers and hotels (Emmer et. al., 1993).

Hotels can use different methods to manage their reservations. Meidan and Chiu (1995) described six methods for managing hotel reservations in their study. They include overbooking, room forecasting, yield management, automation of reservations, employee training, and cost minimization from no-shows. They concluded the most important booking methods are training reservation clerks to speed up bookings, employing people with good knowledge of a hotel's products, and asking for credit card details. The use of reservation

methods varies dependent upon the type of a hotel and its policies. Hotel operators need to emphasize training clerks, forecasting room availability, negotiating room rates with the sales department, and generating reservation records for marketing purposes so that they can achieve high occupancy rates (Meidan and Chiu, 1995). Hoteliers also emphasize chasing guaranteed reservations, taking credit card or fax bookings, and tracking their guest history to decrease the loss from non-guaranteed reservations or no-shows (Meidan and Chiu, 1995). Hotels are inclined to use yield management, demand forecast for hotel rooms, and links to various distribution channels in order to charge high rate to customers. The booking methods should include making direct bookings, sending confirmation letters to customers, and avoiding sending away overbooked guests if hotels want to hold their regular guests (Meidan and Chiu, 1995).

Global Distribution Systems (GDSs)

Global Distribution Systems (GDSs) are computer systems that travel agents use to book airline seats, rental cars, hotel rooms, and other travel products and services (Emmer et al., 1993). In the early 1970s, airline reservation systems enabled travel agents to book seats without having to use the telephone. In the late 1970s, airline reservation systems were also expanded to provide hotel bookings and other travel-related services. In 1990s, most of the GDSs have greatly improved their hotel programs. Travel agents can directly access hotels' room inventories and provide their clients with instant confirmation numbers. Some hotel chains have seamless connectivity with the GDSs, which eliminate the rate and availability discrepancies. Some GDSs with visual imaging programs allow hotels to market themselves

to travel agents through the display of images. Computer systems enable travel agents to book hotel rooms directly without using a toll-free telephone number (Emmer et al., 1993).

The GDSs vary dependent upon their functions and developers. Burns (1995) states that the systems used in the U.S. are Apollo, SABRE, System One, WORLDSPAN PARS, and WORLDSPAN DATAS II. Apollo was activated in spring 1993, and about 10 hotel companies joined at that time. SABRE was used in July 1995, and three hotel companies activated. System One was activated in June 1995, while Worldspan was first being used in October 1995. The Canadian system is Gemini. The systems in Europe are Amadens and Galileo. And the Asian systems are AXESS, Fantasia, and Abacus. Meidan and Chiu (1995) suggest that the major reason for using computer network communications to conduct reservation inquiries be that they are faster and less expensive than conventional reservation methods. Emmer et al. (1993) also found the electronic reservation systems cost less money and labor than telephone.

Many regional groups, including organizations such as the Aspen (Colorado) Chamber of Commerce and Accommodations British Columbia, are developing systems to provide automated CRS (Central Reservation Systems) services for their lodging properties (Chervenak, 1991). Sussmann and Baker (1996) state that hotel groups invested large amounts of money in computerized CRS in recent years because they want to have more centralized control and efficient management of each company's resources. But the different technical characteristics of the CRS of airlines and hotel groups resulted in a complex and expensive link between them (Emmer et al., 1993).

Emmer et al. (1993) pointed out that hotels had struggled for years to fit their numerous rates, varied room types, and multiple services into the highly standardized

computer programs that were designed to process airline reservations. WizCom's "ResAccess" and The Hotel Industry Switching Company's (THISCO) "ulstraswitch" were developed to connect a hotel's CRS to the airlines' CRS (Emmer et al., 1993). The flow of information occurs both ways; information about the property's features as well as room availability can be accessed by anyone using the airline systems (Powers, 1992).

GDS booking is the fastest growing method for hotel reservations. But there are many factors that can prevent hotels from adopting GDS, such as lack of training of both hotel personnel and travel agents, lack of trust by customers, lack of understanding by hotel marketing department personnel, and lack of wholesalers' willingness to use the system. The effect of computers on dehumanizing hotel services and probability they will replace people's job may have negative impact on the automation of the reservation system (Meidan and Chiu, 1995).

World Wide Web

Web sites are easily established with low cost and can be accessed from all over the world. The Web is becoming a marketing and management tool used by companies. Many companies have set up Web sites on the Internet, and hotel companies are no exception. About 80% of the world's top hotel chains had their own Web sites by the end of 1996 (Ayano Hird, 1997). About half of the U.S. hotel chains have online reservation facilities - with the abilities to interactively check room availability, quote rates, and accept a credit card to guarantee a booking (Hensdill, 1998). However, research shows that there is a huge chasm between hotels' providing reservations on the Web and customers' being able to make reservations via the Web site (Murphy et al., 1996). Murphy et al. (1996) found only 35

percent of the hotel Web sites had a functioning reservation system. Only seven of the 36 sites suggested how to make payment, and only two offered a secure (encrypted) method for making payment directly on the Web sites. They concluded that most hotel Web sites were not capable of selling products in a single seamless process (Murphy et al., 1996).

Customers are concerned about not only the payment method but also the price offered by Web sites. O'Connor and Horan (1999) pointed out that there was an expectation among consumers that prices quoted on the Web would be better than those offered through other channels. Customers' expectations include: 1) the online sellers are competing with traditional retailers based on price, 2) the high cost of distributing hotel rooms through travel agents and tele-sales can be reduced, and 3) many hotels have used the Web to promote their hotel rooms at relatively low price (O'Connor and Horan, 1999).

Customers may find that it is not convenient for them to make a final decision based upon the information obtained on the hotel Web sites. O'Connor and Horan (1999) find a majority of hotel Web sites are not providing customers with the facilities they need to find appropriate properties and to make online bookings. Ninety percent of the 50 sites have a search engine to assist customers search hotel properties by region, while only 24 percent of the sites allowed users to specify criteria other than location for a search (such as non-smoking rooms, leisure or other facilities, etc.). Twenty-nine percent of the sites allowed customers to use a reservation request facility in which customers needed to fill in a form with details such as the dates and types of room required and send the electronic form to the company for processing. Then, the company and the customer contact each other via e-mail to confirm the reservation. This kind of reservation request is cumbersome and inefficient (O'Connor and Horan, 1999). Only half of the sites provided online reservation facilities in

which customers can check room availability and room rates, and make online payment using a credit card. This online reservation system can generate a confirmation number immediately and follow-up e-mail will further confirm the booking.

Customers not only book hotel rooms online but also search for information on Web sites. Many consumers are using the Internet as a channel to find information about types of rooms and rates. After finding a suitable room and rate, they will go to traditional reservation facilities to complete the reservation. Connolly, Olsen, and Moore (1998) reported that in a Nielsen study, 53 percent of the people used the Internet to reach a purchase decision, and only 15 percent of these people completed the online transaction. O'Connor and Horan (1999) pointed out more and more hotels are using third parties to actually process the reservation since hoteliers can save on the development cost. O'Connor and Horan (1999) doubt if hotel chains are really serious about turning the Web into a mainstream distribution channel.

Perceptions of IT

Researchers have studied hotel managers' perceptions of IT, the Internet, and the Web for several years (Van Hoof et al., 1995, Van Hoof et al., 1996, Van Hoof and Combrink, 1997, Van Hoof and Verbeeten, 1998, Van Hoof et al., 1999). HITA, in cooperation with PKF Consulting, conducted a survey to identify the needs and perceptions of IT among hotel managers in the U.S. (Van Hoof et al., 1995). They found that almost all lodging properties used some computer technology. Nearly half of the managers believed that their technology needs are high or very high. Most respondents believed customer satisfaction could be enhanced by technology. Managers rated their own technology awareness significantly higher than that of their employees. Three quarters of the respondents

rated their staff's overall technology awareness as average or low. The major determinants of how technology is perceived by managers are the size of the property, its level of automation, and its automation history (Van Hoof et al., 1995).

Because IT develops variously in different countries due to the investment of the government and companies, the managers' perceptions of IT can differ. Van Hoof et al. (1996) conducted an international study to compare the perceptions of lodging managers in the United States, Canada, and United Kingdom about computer technology and their opinions on technology needs, competency, and levels of automation. They found that overall managers rated their own technological competence as 3.36 on a five-point Likert scale (from a low of 1 to a high of 5). Managers in the U.S. and Canada were more confident in their own technological abilities than their counterparts in the UK. Overall, only half of the respondents received some type of IT training or education. The technology needs were rated highest by the respondents in the UK and lowest by those in Canada. All the respondents in these three countries were satisfied with technology to enhance the effectiveness of the operation. Lodging managers were pleased with using technology to enhance customer satisfaction with the property. They also found that the technology needs of small properties were significantly lower than those of large properties and managers of small properties rated guest-operated devices significantly lower than did those of large properties.

As the Internet is becoming a crucial component in the current IT environment, researchers (i.e., Van Hoof and Combrink, 1997) have paid more attention to the benefits that the Internet provides. Van Hoof and Combrink did another study in 1997 with PKF consulting. They found that most respondents were satisfied with the Internet as a marketing and advertising tool and they were least impressed with the role the Internet could play in

training. Respondents also identified that the two most important benefits of the Internet were the exposure of the property to customers and advertising and marketing, and the most important drawback was the cost and time involved in creating and maintaining an Internet presence. Van Hoof and Combrink (1998) indicated that managers from limited-service properties were not as impressed by the Internet as their counterparts in full-service and resort properties because they had less experience with the Internet. But limited-service properties could gain more benefits from the Internet than full-service properties.

Van Hoof and Combrink surveyed managers' perceptions of the Internet within the US in 1998. In order to find out perception of the Internet of managers from other parts of the world Van Hoof et al. (1999) conducted another study among the membership of Global Hoteliers, an organization of executives and managers in the lodging industry all over the world. The study was to find their professional use of the Internet and examined their perceptions of the Internet. One hundred and sixty six respondents were from 53 countries on six continents. Ninety-nine percent of the respondents used e-mail and 88 percent stated their properties had a Web page. Eighty percent of the respondents' properties' Web sites were built and maintained by either outsourcing companies or staff in their corporate offices. A majority of the properties (83 percent) had a Web page to allow users to book online. Only 27 percent of the respondents mentioned that online reservations were better than conventional methods. Respondents believed the Internet would be very important to market the hospitality industry in the next ten years.

Internet Users' Characteristics

The number of Internet users has reached up to 378 million, according to an NUA survey in 2000 (see Table 2-1). Nearly half of the users are from the United States and Canada, while the users from Europe account for almost a third of the total population. The rest of the users are from Asia and other countries including Africa, Latin America, and Middle East.

Table 2-1. Number of Internet Users^a

Region	Number (million)	Percentage (%)
Canada & USA	161.31	42.71
Europe	105.89	28.04
Asia/Pacific	89.68	23.75
Latin America	15.26	.04
Africa	3.11	.01
Middle East	2.40	.01
World Total	377.65	100.00

a. "How Many Online," 2000

Internet users have been traditionally predominately males (Dickey, Piccoli, and Ives, 1998). In 1994, less than ten percent of the Internet users were females (“GVU’s WWW User Survey,” 1998). However, the gender gap has been substantially reduced during the past four years, especially in the U.S. and Canada (Dickey et al., 1998). According to GVU’s 10th Web users’ survey (Oct., 1998), females account for about 34% of the respondents. In North America, about 46 percent of the Internet users are women, compared to 43 percent nearly two years ago (Lieb, 1999). Women were about 52 percent of the Internet users who have been online for less than one year (Martinez, 1998). Apparently, the increase in percentage of female Internet users shows that the number of female users will tend to equal that of male users in the future.

The average age of the respondents has increased from 33 years (Apr. 1996) to 37.6 years (Nov. 1998). The Internet users from Europe are generally younger than those from America (Dickey et al., 1998). The average age of the Internet users in the United States is 41 years (“Average US Internet Users Over 40,” 2000).

The income of Internet users has historically been higher than the average of the general population (Dickey et al., 1998). The average household income of the GVU 10th survey respondents is about \$57,000 per year. In the previous three surveys, the average income has been declining steadily because of the increase in the percentage of respondents whose income is under \$30,000 per year (see Figure 2-1). The number of Internet users with annual household income under \$25K has grown faster than the total users. However, they still only represent about ten percent of the total Internet users (“The Dollar Divide Demographic Segmentation,” 2000).

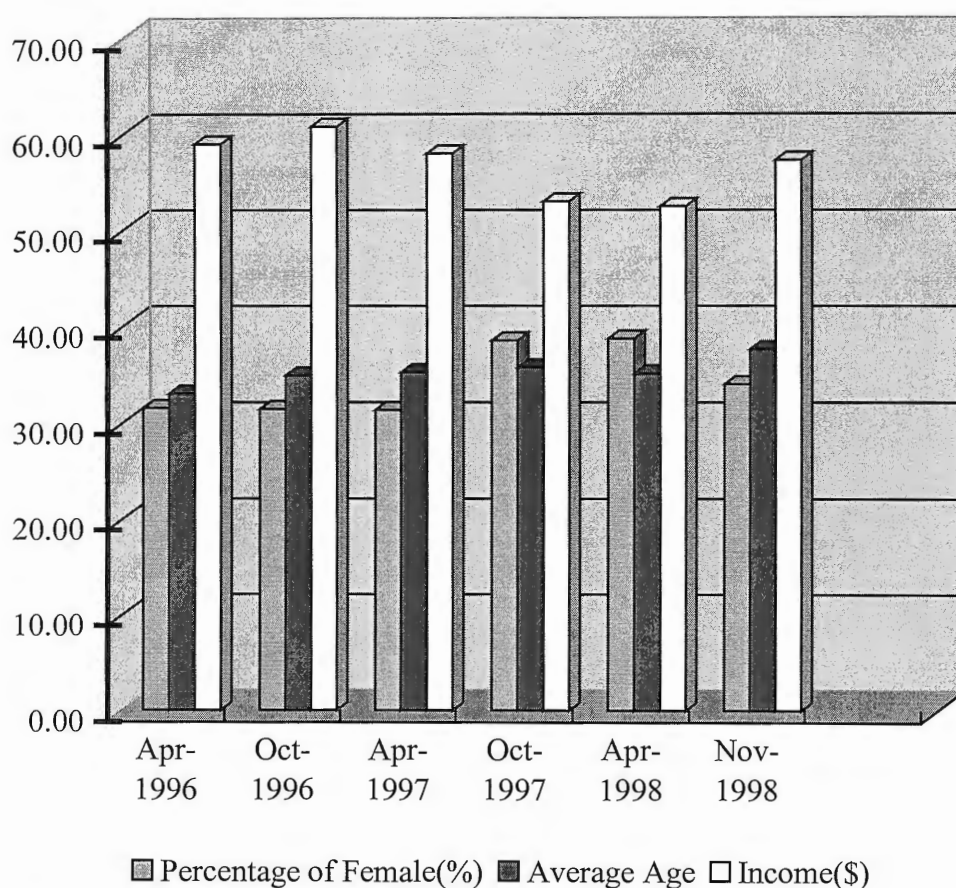


Figure 2-1. Internet Users' Demographics ("GVU's WWW User Survey," 1998)

The number of online travelers has increased tremendously in the past several years. In 1999, the number of online travelers was 85 million, while there were only 29 million in 1996 (TIA, 1999). Online travelers are more likely to be younger than the average of the traveling population. Online travelers are more likely to have an annual household income above \$75,000, be college-educated, and work in a professional/managerial occupation than other travelers (TIA, 1999). Online travelers take more trips on average than non-buyers (5.8 percent vs. 3.6 percent). They take more business trips (3.6 vs. 2.0) and more personal trips each year (2.3 vs. 1.6) ("Cost Saving Draw Consumers," 2000). Planning travel online is also

growing rapidly. TIA(1999) shows that over a 1,500 percent increase in online travel planning during this three-year period. There are 52.2 million online travelers using the Internet for travel planning, up from 33.8 million in 1998, 11.7 million in 1997 and 3.1 million in 1996 (TIA, 1999). Three-fifths of all travelers who are online consult the Internet to obtain information on destinations or to check prices or schedules, but still thirty eight percent of online travelers do not use the Internet to have information on destinations or to check prices (TIA, 1999). Travelers booked \$6.5 billion of leisure and business travel online in 1999, indicating almost a triple increase from 1998 (“Growth Rates Slowing,” 2000).

Conceptual Framework for the Study

As the Internet plays an important role in the business world, it is becoming crucial for Internet researchers to better understand customers’ behavior of using the Internet. The Technology Acceptance Model (TAM) (Davis, Bagozzi, and Warshaw, 1989) was adapted to build a conceptual framework for this study (see Figure 2-2).

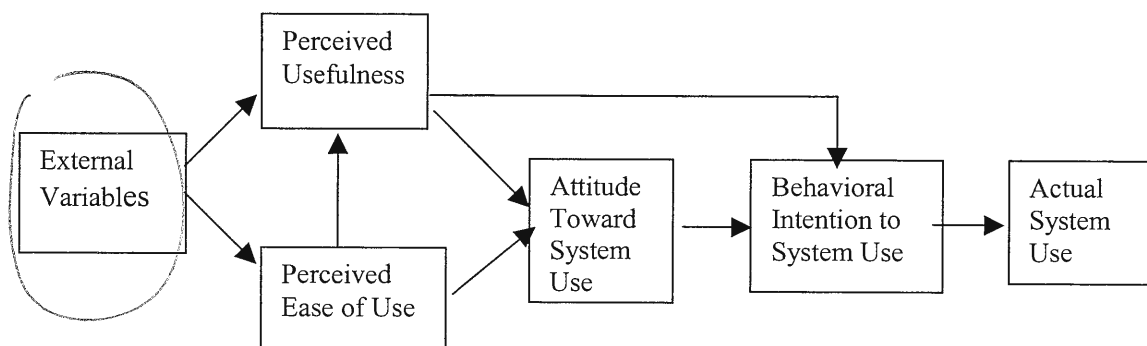


Figure 2-2. Technology Acceptance Model (TAM) (Davis et al., 1989)

Davis et al. (1989) introduced the Technology Acceptance Model (TAM) to explain users' behavior in different types of computing technology. In this model, perceived usefulness (PU) and perceived ease of use (PEOU) are fundamental determinants of computer system use. Davis (1989) defined PU as "the degree to which a person believes that using a particular system would enhance his or her job performance." PEOU refers to "the degree to which a person believes that using a particular system would be free of effort"(Davis, 1989).

Behavior intention is to measure the strength of one's intention to perform a specific behavior (Fishbein and Ajzen, 1975). Attitude refers to individuals' positive or negative feelings about a certain behavior (Fishben and Ajzen, 1975). In TAM, Davis (1989) postulated behavioral intention to system use determines computer usage while behavioral intention is jointly determined by attitudes toward using systems and PU. People intend to perform behaviors toward which they have positive feelings (Fishbein and Ajzen, 1975).

Computer usage is determined by PU because people intend to perform behavior, which would increase their job performance no matter what feelings they have toward the behavior (Davis et al., 1989). In TAM, attitude is jointly determined by PU and PEOU. Positively valued outcomes often increase a person's attitude toward the computer system use (Davis et al., 1989). The easier a system is to interact with, the more efficient the user would feel. The improvement of ease of use may enable a person to do more work for the same effort.

Customers' ultimate purchase decisions begin with their assessment of information need (Jeong and Lambert, 1999). In the conceptual framework for measuring the information quality of lodging Web sites, Jeong and Lambert (1999) pointed out information needs

directly influence PU, PEOU, and perceived accessibility (PA) by mediating the attitude variable. And these three constructs impact critically on customers' final purchase decisions. PA refers to physical access, retrieval capability of desired information, and the interface between users and information sources (Culnan, 1985). Culnan (1985) argues that the users' information accessibility influences their acceptance of information for future decisions. Jeong and Lambert (1999) postulated that PA might influence customers' attitudes toward the Web directly. Customers' use of context (i.e. information needs) and their previous experience with a source can be the determinants of PA (Culnan, 1985).

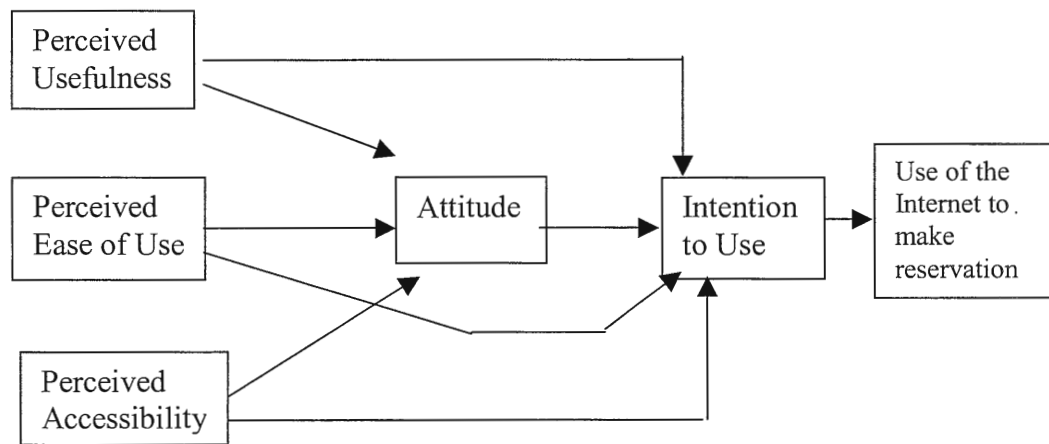


Figure 2-3. A Conceptual Framework to Measure the Acceptance of Online Reservation Systems

In this study, a conceptual framework is developed based on research done by Davis (1989) and Jeong and Lambert (1999) (see Figure 2-3). Because no relevant research to this study has been reported, several propositions have been developed. Customers' attitudes toward the online reservation system is assumed to have a significant relationship with the

three constructs of PU, PEOU, and PA. PU in the study refers to the degree to which customers believe that using online reservation system could enhance the particular task performance. If customers believe the online reservation process is accurate, timely, and secure, they will perceive it as useful. Intention to use is determined by attitude, PU, PEOU, and PA.

Proposition 1: Customers' perceived usefulness of the online reservation system has a positive relationship with their attitudes toward this system.

Proposition 2: The perceived usefulness has a positive relationship with customers' intention to use the online reservation system.

PEOU refers to the degree to which customers believe that using online reservation system would be free of effort. PEOU may include attributes such as easy and flexible to navigate, clear features and appropriate links, and good color contrast.

Proposition 3: Customers' perceived ease of use of the online reservation system has a positive relationship with their attitudes toward this system.

Proposition 4: The perceived ease of use has a positive relationship with customers' intention to use the online reservation system.

PA here refers to the degree to which customers believe that they could access the online reservation system. PA can be measured by ease of access, availability, and convenience.

Proposition 5: Customers' perceived accessibility of the online reservation system has a positive relationship with their attitudes toward this system.

Proposition 6: The perceived accessibility has a positive relationship with customers' intention to use the online reservation system.

Proposition 7: Customers' attitudes toward the online reservation system have a positive relationship with their intention to use the system.

Using the Internet to make reservations is affected by intention to use. Based on customers' experience, they will recommend the Web site to other people and affect their behavior. Their experience can also influence their purchase decision in the future.

CHAPTER 3. METHODOLOGY

This chapter describes the method of the study. It consists of measurement, sampling, data collection, and data analysis. First, measurement includes the ways to measure the constructs of the conceptual framework. Second, sampling describes the method to select samples. Third, data collection includes the steps of collecting data in sequence. Finally, how the data will be analyzed and what statistics will be calculated are introduced in data analysis.

Measurement

In order to measure the customers' perceptions of online reservation systems, 19 items were developed based upon previous research (Davis, 1989; Jeong and Lambert, 1999). Respondents could express the degree to which they agree with these items on a seven point scale with "1" representing strongly disagree and "7" strongly agree.

PU and PEOU are fundamental determinants of computer system use (Davis, 1989). Both of them also are crucial factors in determining the use of online reservation systems. PU is to which degree customers believe by using the online reservation system their task performance could be enhanced. The five items used to measure PU were "completeness of information on the Web site," "accuracy of information on the Web site," "relevancy of information on the Web site," "quickness of reservation," and "saving time."

PEOU refers to what degree customers believe online reservation systems could be free of effort. The six items used to measure PEOU were "clear features," "easy to understand," "easy to follow," "well organized," "good color combinations," and "easy to move around on the Web site."

PA is the physical access, retrieval capability of desired information, and the interface between users and information sources (Culnan, 1985). It can be measured by ease of access, availability, and convenience. The items for PA were “clear hyperlinks,” “loaded quickly,” and “easily connected to the Internet.”

Attitude refers to the positive or negative feelings about a certain thing. The three attitude items were “like using online reservation systems,” “feel good about the system,” and “the Web site is exactly what I would need for a room reservation.”

Intention to use a system can affect the actual system use directly. The items for intention to use were “visit this Web site again” and “book online in the future.”

Sampling

The sample of this study was composed of those who are currently Web users and/or potential customers who could make room reservations via the Internet. The sample of this study was selected from faculty and staff members at five universities in the Midwest area in the United States as a convenience sample. First, the researcher selected 2,000 email addresses from the faculty and staff directory at each university. Second, 400 email addresses were systematically randomly selected from the whole 2,000 at each university resulting in a total 2,000 email addresses.

Data Collection

An online survey was conducted. The online survey questionnaire (Appendix A) was developed and located at the server of the College of Family and Consumer Science (<http://www.fcs.iastate.edu/hrim/chen/questionnaire>). Respondents submitted their answers

by clicking the “Submit Questionnaire” button at the end of the questionnaire. The responses were saved as a text file in the server. In order to increase the response rate, a \$50 incentive was given to three randomly selected respondents. Those who wanted to have their names included in the drawing had to provide their names and e-mail addresses at the end of the questionnaire.

In the questionnaire, the respondents who had made hotel reservations via the Web were asked to provide the Web sites they visited. The respondents who do not have previous experience making online room reservations were asked to visit one of three different hotel Web sites (Holiday Inn, Comfort Suite, and Hampton Inn) before answering the questionnaire. The respondents could be divided into four groups. Group one included the respondents completed the questionnaire after visiting the Web site of Holiday Inn. The respondents who visited Hampton Inn were group two. The respondents evaluated the Comfort Suite’s Web site were group three. And the fourth group contains respondents who have provided their own Web sites and responded based on their experience.

The research project was approved by the review committee of research involving human subjects at Iowa State University. The approval is included in Appendix B.

A pilot test was conducted to check clarity and wording of the questionnaire with eight graduate students who are Web users and potential customers who can make online reservations. They are currently enrolled in the Department of Hotel, Restaurant, and Institution Management.

E-mails were distributed to the selected subjects on June 1, 2001. The e-mails explained the purpose and the usefulness of the study and assured confidentiality of responses. Subjects also were informed of the Web site where the questionnaire was located

and asked to go to the designated Web site to answer the questionnaire. A week later, follow up e-mails were sent out to those who did not answer the questionnaire in order to increase the response rate. A copy of the email is included in Appendix A.

Data Analysis

Data were coded and analyzed using the Statistical Package for Social Sciences (SPSS for Windows10.0). Frequencies were obtained for all the variables to detect possible outlier and to obtain means and standard deviations for all the demographic items. ANOVA analyses and t-test were used to examine whether use of online reservation systems differed based on demographic characteristics. One-way ANOVA analyses were used to determine whether there existed differences in ratings among the four groups of respondents. Correlation analyses were employed to test the seven propositions of the study. Finally, a regression analysis was used to determine the relationship of the perception constructs to the future use intention.

CHAPTER 4. RESULTS

The purpose of this study is to better understand customers' online reservation behavior by identifying the relationships among their perceptions, attitudes, intentions, and use of online reservation systems. This chapter presents the results of data analysis in the following sections:

- 1) Demographic characteristics of respondents,
- 2) Relationships between demographic characteristics and use of online reservation systems,
- 3) Differences among four groups of respondents,
- 4) Evaluation of the propositions, and
- 5) Relationships of the perceptions to the intention to use an online reservation system in the future.

Demographic Characteristics of Respondents

One hundred and thirty seven subjects submitted their questionnaire, with a response rate of 6.85%. Of the 137 respondents, seven did not answer any questions in the second part. Since the primary objective of the study was to analyze the customers' perceptions of an online reservations system, it was decided that these seven responses were excluded from further analyses. This resulted in 130 usable responses.

The demographic characteristics of the respondents were summarized in Table 4-1. Seventy-five respondents out of 130 (58.1%) were females. The largest age group was from 46 to 55, accounting for slightly more than one third of the respondents, followed by 36-45 (23.9%), 56 or above (20.2%), 26-35 (17.4%), and 25 or under (3.7%). The age group of 25

Table 4-1. Demographic characteristics of the respondents

Demographic profile	Frequency	Percentage
Gender		
Female	75	58.1
Male	55	41.9
Age		
Under 35		
36-45	23	21.1
46-55	26	23.9
56 or above	38	34.9
	22	20.1
Education		
High School and Other	10	8.1
2 Year College	9	7.2
4 Year College	16	12.9
Master	14	11.3
Ph. D.	75	60.5
Income		
Under \$50K	21	17.7
\$50K - less than \$70K	26	21.8
\$70K – less than \$100K	30	25.2
\$100K or higher	42	35.3

or under only has four respondents, so it was collapsed into the age group of 25-35 to form a new group of 35 or under (21.1%) for the subsequent analysis.

More than half of the respondents (60.5%) had a PhD degree. Most of the respondents (84.7%) had a degree from a 4 year college or higher. Slightly more than one third of the respondents (35 respondents) had an annual income of \$100K or higher. Thirty respondents (25.2%) reported their annual household income was from \$70K to less than \$100K and 26 (21.8%) from \$50K to less than \$70K. Only 10.1% and 7.5% of the respondents were in the groups of \$30k-less than \$50k and under \$30k, respectively. Since the small number of respondents in the group of under \$30k, the group was again collapsed with \$30k-less than \$50k to create a new group of under \$50k (17.6%) for further analysis.

Fifty-one faculty and staff members (39.2%) had never used an online reservation system to book a hotel room before. Nearly 30% of the respondents reserved rooms via the Internet only 1 or 2 times. About 25% of them had 3-5 times of online booking. These three groups accounted for the majority of the sample. Only one respondent had made online reservations more than 10 times. Marriott's Web site was the most commonly mentioned by the respondents, followed by Expedia.com and Priceline.com.

Relationships between Demographic Characteristics and Use Behavior

ANOVA analysis was performed to determine whether use of online reservation systems differed based on demographic characteristics of the sample. The results are presented in Table 4-2. From the table, respondents with different education background significantly differed in the number of times of booking hotel rooms via the Internet ($F=$

Table 4-2. Analysis of Variance (ANOVA) and t test

	Mean times of using online reservation systems	Standard Deviation	Test statistics
Gender			-2.272 ^a
Female	1.56	2.01	(p<.05)
Male	2.44	2.40	
Age			.139 ^b
35 or under	2.17	2.22	(p>.05)
36 – 45	1.83	2.16	
46 – 55	1.87	1.77	
56 or above	2.05	2.77	
Education			4.549 ^b
2 year college	.67	.79	(p<.01)
4 year college	.78	1.39	
Master's	1.29	1.61	
Ph.D	2.59	2.48	
Other	1.00	1.29	
Annual household income			2.233 ^b
Under \$50K	.88	1.25	(p>.05)
\$50K- less than \$70K	2.31	2.33	
\$70K- less than \$100K	1.68	2.31	
\$100K or higher	2.14	2.13	

a. t test

b. F value

4.549, $p < .01$). People with higher education levels were more likely to use online reservation systems.

Use of online reservation systems also differed significantly based on gender ($t = -2.272$, $p < .05$). Males tended to have made more online room reservations than females. There was no significant difference of frequency of online reservations between age groups ($F = .139$, $p > .05$). No significant difference of the frequency of online reservations between income groups was found in the study ($F = 2.233$, $p > .05$).

Difference among Four Groups of Respondents

Since this study was focusing on the mid-priced hotels' online reservation systems, the respondents in the fourth group who provided mid-priced hotel Web sites (Holiday Inn, Hampton Inn, Comfort Suite, Days Inn, and Sheraton etc.) were included for further analysis. Those who visited Holiday Inn were sorted into group one. Those who visited Hampton Inn were included into group two. And those who visited Comfort Suite were put into the third group. This resulted in 25 usable respondents in group one, 26 in group two, 22 in group three, and 20 in group four.

To obtain the values of PU, PEOU, PA, Attitude, and Intention, ratings of each item of the constructs were derived from the results of questionnaire. Then, the items of each construct were averaged to determine the overall rating of the construct.

The one-way ANOVA analysis was conducted to explore whether differences existed in respondents' perceived usefulness (PU), perceived ease of use (PEOU), perceived accessibility (PA), Attitude, and Intention among the four different groups (those who viewed the Web site for each of the three hotels' sites over those who had previously made

online reservations) by using a Tukey's honesty test. The results showed that there existed no differences.

The means and standard deviations of each construct were shown in Table 4-3. The mean differences of PU, PEOU, PA, Attitude, and Intention among the four groups were less than .19, .16, .54, .57, and .76 respectively.

Results of all the Tukey's honesty test ($p > .05$) showed that there were no significant differences among the four groups of perceptions of the online reservation systems. The four groups were collapsed together to form one group of respondents for further analysis.

Table 4-3. Means of the constructs

	Perceived Usefulness		Perceived Ease of Use		Perceived Accessibility		Attitude		Intention	
	Mean ^a	S.D.	Mean ^a	S.D.	Mean ^a	S.D.	Mean ^a	S.D.	Mean ^a	S.D.
Group I N=25	5.14	1.29	5.02	1.32	5.57	1.10	4.31	1.93	4.34	1.89
Group II N=26	5.15	1.27	5.03	1.30	5.03	1.30	4.36	1.49	4.17	1.33
Group III N=22	5.25	1.06	5.18	1.21	5.36	1.13	4.59	1.31	4.61	1.83
Group IV N=20	5.33	1.03	5.10	.82	5.53	.82	4.88	1.45	4.93	1.50
Overall	5.21	1.16	5.08	1.18	5.36	1.12	4.51	1.56	4.48	1.65

a. Scale: "1" strongly disagree to "7" strongly agree.

Evaluating the Propositions

This study has developed seven propositions to test the relationships among the constructs of the conceptual framework. Cronbach alpha was calculated in Table 4-4 to determine the reliability of the instruments. All the alphas were higher than conventional level .70. The Cronbach alphas for perceived usefulness, perceived ease of use, perceived accessibility, attitude, and intention were .87, .91, .80, .91, and .80 respectively as shown in Table 4-4. All alphas were from .80 to .91, which means that each construct has high internal reliability (Cronbach, 1951).

Correlation analysis was used to identify the relationships among PU, PEOU, PA, Attitude, and Intention and to test the seven propositions. The results were presented in Table 4-5.

Proposition 1: Customers' perceived usefulness of the online reservation system has a positive relationship with their attitudes toward this system.

The result of the correlation analysis showed in Table 4-5 that the correlation between PU and Attitude was .42 ($p < .001$) suggesting a limited but positive relationship. Therefore, proposition 1 was supported at the level of .05.

Proposition 2: The perceived usefulness has a positive relationship with customers' intention to use the online reservation system.

The correlation between PU and Intention was -.04 ($p > .05$), which means proposition 2 was not confirmed at the level of .05.

Proposition 3: Customers' perceived ease of use of the online reservation system has a positive relationship with their attitudes toward this system.

Table 4-4. Reliability analysis

	No. of Cases	Items of Each Construct	α^a
Perceived Usefulness	92	-completeness of information -accuracy of information -relevancy of information -quickness of reservation -saving time	.87
Perceived Ease of Use	86	-clear information -easy to understand -easy to follow -well organized -good color combinations -easy to move around	.91
Perceived Accessibility	90	-simple & clear directions for use -loaded quickly -easily to access the Internet	.80
Attitude	91	-like using the systems -feel good about the systems -exactly what you want	.91
Intention	93	-visit the Web site again -book online in the future	.80

a. Cronbach alpha

Table 4-5. Correlation analysis of the five constructs

	PU	PEOU	PA	Attitude
N=93				
PEOU	.59**	1.00		
PA	.41**	.37**	1.00	
Attitude	.42**	-.17	.11	1.00
Intention	-.04	-.02	.07	.58**

** p<.001

As shown in Table 4-5, the correlation between PEOU and Attitude was -.17 ($P>.05$).

Proposition 3 was not supported at the level of .05.

Proposition 4: The perceived ease of use has a positive relationship with customers' intention to use the online reservation system.

The correlation analysis showed the correlation between PEOU and Intention was -.02 ($p>.05$). Proposition 4 was also not supported at the level of .05.

Proposition 5: Customers' perceived accessibility of the online reservation system has a positive relationship with their attitude toward this system.

The correlation between PA and Attitude was .11 ($p>.05$), which did not support the proposition at the level of .05.

Proposition 6: The perceived accessibility has a positive relationship with customers' intention to use the online reservation system.

The correlation between PA and Intention was .07 ($p > .05$). Proposition 6 was not supported at the level of .05.

Proposition 7: Customers' attitude toward the online reservation system has a positive relationship with their intention to use the system.

The correlation between Attitude and Intention was .58 ($p < .001$), which means that Attitude has a significant, moderate positive relationship with Intention. Proposition 7 was confirmed at the level of .001.

Relationship of Perceptions to Future Use Intention

A multiple regression analysis was performed to determine the relationship of PU, PEOU, PA, and Attitude to future use intention. The results are presented in Table 4-6. The regression model being used in the study is as follows:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \varepsilon$$

Where Y = Intention to use online reservation systems in the future

$$X_1 = \text{PU} \quad X_2 = \text{PEOU} \quad X_3 = \text{PA} \quad X_4 = \text{Attitude}$$

$$b_0 = \text{Intercept} \quad b_1 \text{ to } b_4 = \text{Partial regression coefficients}$$

$$\varepsilon = \text{error item (residual)}$$

The final model would be as follows:

$$Y = 1.65 + 0.75X_4^*$$

*significant at the level of .05

Table 4-6. Analysis of variance (ANOVA) table of regression model

	Sum of Squares	df	Mean Square	F	Sig.
Regression	89.19	4	22.30	13.49	.000
Residual	112.44	68	1.65		
Total	201.63	72			

The multiple regression analysis showed that the regression model was statistically significant ($F=13.49$, $p<.001$). The R value of the model was .71 and R-square was .51, which indicated about 51% of the variance in Intention was explained by the Attitude predictor variable. However, the other three variables, PA ($t= -.61$, $p>.05$), PEOU ($t= -.54$, $p>.05$), and PA ($t=.83$, $p>.05$), were excluded from the regression model because these variables were not significant at the level of .05.

CHAPTER 5. CONCLUSION AND SUGGESTIONS

This chapter discusses the conclusion and suggestions of the study. In the conclusion, demographic profile of the respondents, overall ratings of mid-priced hotel Web sites, relationships of the constructs in the conceptual framework, and future use intention are included. Limitations of the study and suggestions for future research are also discussed here.

Conclusion

In TAM, Davis (1989) pointed out that users' behaviors in different types of computing technology were influenced by PU, PEOU, Attitude, and Intention. Jeong and Lambert (1999) suggested adding another factor of PA to the Davis' model. Based upon the two studies, a conceptual framework was developed to study customers' behavior of using online reservation systems. The questionnaire in this study included 19 items, which were adopted from previous research to ensure content validity (Davis, 1989; Jeong and Lambert, 1999; Lin and Lu, 2000).

Demographic profile

The demographic characteristics of the respondents were examined to help explain findings in the study. Almost forty percent of the respondents had never used online reservation systems before. The average number of times of booking online in the past 12 months were only 1.95. Only one respondent reported booking online for more than 10 times in the past 12 months. The findings indicate that many respondents are still using the traditional ways, such as telephone and fax, to make reservations. People may not be familiar

with the online reservation systems yet. It will take some time for the online reservation systems to become a main channel of making reservations.

Females' mean times of using online reservation systems was significantly less than males' ($t=-2.272$, $p<.05$). Dickey et al. (1998) pointed out the number of female Internet users were traditionally smaller than that of males. Females did not use the online reservation systems as often as males did. One possible explanation is that females consider it more risky to make online reservations than males. Because most Web sites need a credit card number to confirm the reservation, customers need to take some risk and give out their credit card information. Hoteliers should provide a more secure way to do that or ensure the risk-free way for customers to disclose their information in attracting female users. Market efforts should be made to have more women visit hotel Web sites and make online reservations.

A positive linear relationship existed between the education level and the mean times of using online reservation systems. This finding was consistent with a previous survey (TIA, 1999). The people with higher education were more likely to use online reservation systems. It is not surprising that people with higher education tend to use the high-tech facility more often than other people. Marketing strategies to attract more people to the Internet should not overlook college students because they would become the group of people with higher education and the most frequent users in the future.

Overall ratings of mid-priced hotel Web sites

This study was designed to measure customers' perceptions of online reservation systems of mid-priced hotel Web sites. Results of a Tukey's honesty test showed there were no significant differences among the respondents' ratings of the online reservation systems.

The findings indicate that the online reservation systems of most mid-priced hotel sites are very similar and have no significant differences from each other in terms of customers' perceptions.

Relationships of the constructs in the conceptual framework

The results of the study showed that propositions 1 and 7 were supported at the level of .05. Customers' perceived usefulness of the online reservation system had a positive relationship with their attitudes toward this system. This conclusion was consistent with previous studies (Davis, 1993; Lin and Lu, 2000). Customers' attitudes toward the online reservation system significantly correlated with their intention to use the system. Attitude was the only construct having a significant relationship with Intention in the study. Previous studies showed that besides Attitude, PU also was significantly related with Intention.

Propositions 2, 3, 4, 5, and 6 were not supported at the level of .05 in the study. Customers' perceived usefulness did not significantly correlate with their intention to use. This finding suggests people form their intentions toward using an online reservation system based largely upon their attitude toward the systems rather than the usefulness of the system. The relationship between PEOU and Attitude in the conceptual model was not significant. Lin and Lu (2000) also found that ease of use had an indirect effect on the formation of users' attitudes toward a Web site. Although users' perceived accessibility was an important factor in the conceptual framework of the study, PA did not have a significant relationship with Attitude. In this study, PA was not significantly correlated with Intention either. All three constructs, PU, PEOU, and PA, did not have a direct impact on Intention.

Although they were not stated in the propositions, three significant relationships were found in the correlation analyses. PU was significantly correlated to PEOU (Correlation=.59, $p<.001$) and PA (Correlation=.41, $p<.001$). PEOU also had significant correlation with PA (Correlation =.37, $p<.001$). Such findings suggest that customers tend to perceive the usefulness of an online reservation system positively if they consider it easy to use. They would rate the usefulness of an online reservation system higher if they can access the system more easily. The perceived accessibility would be rated higher if the perceived ease of use is higher. The easier a system was to use, the more accessibility it would be considered.

Future use intention

It's difficult to measure customers' actual use behavior. However, to measure the intention to use is relatively easy. By measuring the intention to use, future use of actual systems could be predicted because intention to system use determines actual system use (Davis et al., 1989). The actual use of system is affected exclusively by intention to use. Results of the multiple regression analysis confirmed that the attitude was the only variable significantly related to intention to use.

Limitations

This study attempted to determine the customers' perceptions of an online hotel reservation system. However, there were limitations in the study. First of all, because of time and budget constraints, the sample was selected only from faculty and staff members at five universities in the mid-west area in the US. Faculty and staff members tend to have higher education and may be more active in using the Internet than other users. Their perceptions

and use of online reservation systems might be significantly different from other populations. Care should be exercised when generalizing the results to other Internet users.

The questionnaire was distributed at the beginning of June. Because of the different schedules of the five universities, some faculty and staff members might have had time to respond the questionnaire while others might have been busy finishing the spring semester, still others might have gone for vacation. If a different period of time had been chosen, the sample size might have been larger for further analysis.

Three hotel Web sites were provided for those who had never used an online reservation system before so they could see how it functioned. Because of respondents' lack of exposure to online reservation systems and individual' preference of different types of hotels, they may indicate not using the Web sites in the future even though they gave high ratings to the usefulness and ease of the Web sites. This could be one reason for the rejection of propositions 2 and 4.

Finally, this study focused on measuring customers' perception of using an online reservation system for mid-priced hotels. Thus, the results of this study could not be generalized to other segments of the hotel industry.

Suggestions for Future Research

The findings of the study showed the relationships between the constructs in the conceptual framework. However, PU was not one of the determinants of Intention, which was inconsistent with the conclusions of previous research (Davis et al., 1989; Lin and Lu, 2000). Future research should pay more attention to the relationship between PU and Intention. This study also found no significant relationship between PEOU and Attitude

while previous studies showed they were significantly related with each other. Further research is necessary to investigate the two constructs. The construct of actual system use is difficult to measure. A longitudinal study could be used to obtain the future use pattern if time allows.

Faculty and staff members are part of the Internet users, but they cannot represent the whole population. To assess the generalizability of the findings of the study, future studies with other groups of Internet users, such as hotel guests, are recommended. To purchase samples from commercial sampling companies is another option.

As noted earlier, respondents' preferred hotels could affect results of the study. It is recommended that future researchers establish an independent Web site with online reservation functions. Then, they can ask respondents' perceptions of the online reservation system and their future use intention. Without the effect of hotel preference, respondents can provide unbiased answers.

APPENDIX A.
SURVEY INSTRUMENT

Dear Faculty and Staff members:

This study is designed to measure consumers' behavior related to an online hotel reservation system. The research is being conducted as part of my graduate research. By participating in this study, you will help hoteliers to better understand consumers' online reservation behavior which will help them improve their systems to better serve customers such as you.

Please click on the linked Web site below

<http://www.fcs.iastate.edu/hrim/chen/questionnaire.html> to complete the survey questionnaire. It will take approximately 10 minutes to complete the questionnaire. The information you provide will be kept confidential and will be analyzed only in aggregation.

Thank you very much for your cooperation in this study. I look forward to receiving your response. If you have any questions about this study, please feel free to contact me.

Sincerely

Jinran Chen
Graduate Researcher
(515)572-4278
jrchen@iastate.edu

Miyoung Jeong, Ph.D.
Major Professor
(515)294-3038
mjeong@iastate.edu



Hotel, Restaurant, and Institution Management

OPINION SURVEY OF ONLINE RESERVATIONS

This questionnaire has two sections. Please complete both of them.

When completed, please click on the
"Submit Questionnaire" button at the end of the survey questionnaire.

SECTION I. DEMOGRAPHIC PROFILE

Please provide information about yourself.

1. Gender:

☐ Female ☐ Male 2. Age: ▼

3. Your highest level of education:

▼

4. Your total annual household income:

▼

5. How many times have you made a hotel room reservation via the Internet since January 1, 2000?

▼

SECTION II. BEHAVIOR OF AN ONLINE RESERVATION

If you have made a hotel reservation using the Internet, please recall the most recent Web site at which you made that reservation. Please write down the name of the hotel or the Web site. And then, [click here](#) to complete the questionnaire.

If you have never made a hotel room reservation on the Web, please suppose you are going to Los Angeles for a conference and want to make a reservation via the Web. Assume you are going to stay in a mid-priced hotel, such as Holiday Inn, Hampton Inn, etc. Please go to <http://www.basshotels.com/holiday-inn> and go through the steps to make a reservation, except not confirming your reservation. After finishing the reservation process, please come back to the questionnaire and [click here](#) to complete the questionnaire.

After carefully reading each question below, please click the circle below to a number that best indicates your opinion using the following scale.

Strongly Disagree			Neutral			Strongly Agree
1	2	3	4	5	6	7

- [illegible]

In order to enter the drawing for **\$50 cash**, please provide your **name** and **email** below:

Name:

Email:

Thank you for your assistance with my research.
You have completed the questionnaire. Please click the button below to submit the questionnaire.

Submit Questionnaire

APPENDIX B.

HUMAN SUBJECTS REVIEW COMMITTEE APPROVAL

Iowa State University Human Subjects Review Form

51

OFFICE USE ONLY	
EXPEDITED _____	FULL COMMITTEE <u>X</u> ID# <u>01-536</u>

PI Last Name Chen Title of Project Determinants of Online Hotel Reservation System Use

Checklist for Attachments

The following are attached (please check):

13. ☒ Letter or written statement to subjects indicating clearly:
 - a) the purpose of the research
 - b) the use of any identifier codes (names, #'s), how they will be used, and when they will be removed (see item 18)
 - c) an estimate of time needed for participation in the research
 - d) if applicable, the location of the research activity
 - e) how you will ensure confidentiality
 - f) in a longitudinal study, when and how you will contact subjects later
 - g) that participation is voluntary; nonparticipation will not affect evaluations of the subject
14. ☐ A copy of the consent form (if applicable)
15. ☐ Letter of approval for research from cooperating organizations or institutions (if applicable)
16. ☒ Data-gathering instruments

17. Anticipated dates for contact with subjects:

First contact

Apr. 30, 2001

Month/Day/Year

Last contact

May 11, 2001

Month/Day/Year

18. If applicable: anticipated date that identifiers will be removed from completed survey instruments and/or audio or visual tapes will be erased:

Month/Day/Year

19. Signature of Departmental Executive Officer

Date

Department or Administrative Unit

[Signature]

4/26/01

HRIM

20. Initial action by the Institutional Review Board (IRB):

☒ Project approved

☒ Pending Further Review _____

☐ Project not approved _____

Date

Date

☒ No action required _____

Date

21. Follow-up action by the IRB:

Project approved ☒

Project not approved _____

Project not resubmitted _____

Date

Date

Patricia M. Keith

Name of IRB Chairperson

4-26-01

Approval Date

[Signature]
Signature of IRB Chairperson

REFERENCES

- Average US Internet Users Over 40. (2000). NUA. [On-line]. Available: http://www.nua.ie/surveys/?f=VS&art_id=905356144&rel=true.
- Ayano Hird, S. (1997). Hoteliers find initial success on the web. *Hotels*, February, 64.
- Berthon, P., Pitt, L. , & Watson, R. (1996). Re-surfing W3: Research perspectives on marketing communication and buyer behavior on the world wide web. *International Journal of Advertising*, 15, 287-301.
- Burns, J. D. (1995). Hospitality marketing through global distribution systems. *HSMAI Marketing Review*, 12-17.
- Chervenak, L. (1991). CRS: The past, the present , the future. *Lodging*, 16(10), 13-15.
- Connolly, D., Olsen, M., & Moore, R. (1998). The Internet as a distribution channel. *The Cornell Hotel and Restaurant Administrative Quarterly*, 39(4), 42-54.
- Cost Savings Draw Consumers to Online Travel. Cyberatlas, (2000). [On-line]. Available: http://cyberatlas.internet.com/markets/travel/article/0,,6071_513781,00.html
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16, 294-334.
- Culnan, M. J. (1985). The dimensions of perceived accessibility to information: Implications for the delivery of information systems and services. *Journal of the American Society for Information Science*, 36(5), 302-308.
- David, J. S. , Grabski, S. & Kasavana, M. (1996). The productivity paradox of hotel industry technology. *The Cornell Hotel and Restaurant Administration Quarterly*, 47(2), 64-70.
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340.
- Davis, F. D. (1993). User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. *International Journal Man-machine Studies*, 38, 475-487.
- Davis, F. D. , Bagozzi, R. P. , & Warshaw, P. R. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35(8), 319-339.

- Dickey, M. H. , Piccoli, G. , & Ives, B. (1998). *Electronic Commerce: Markets and Users*. Chapter 5, 101-121.
- Emmer, R. M., Tauck, C., Wilkinson, S. & Moore, R. G. (1993). Marketing hotels: Using global distribution systems. *The Cornell Hotel and Restaurant Administrative Quarterly*, 34(6), 80-89.
- Fishbein, M. & Ajzen, I. (1975). *Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research*. Addison-Wesley, Reading, MA.
- Frew, A. J. & Horam, R. (1999). Ecommerce in the UK hotel sector: A first look. *International Journal of Hospitality Information Technology*, 1(1), 87-102.
- Growth Rates Slowing for Online Travel. Cyberatlas, (2000). [On-line]. Available: http://cyberatlas.internet.com/markets/travel/article/0,,6071_342951,00.html
- GVU's WWW User Survey. (1998). GVU. [On-line]. Available: http://www.cc.gatech.edu/gvu/user_surveys/
- Hensdill, C. (1998). Hotels technology survey. *Hotels*, February, 51-76.
- Hotels' 2001 worldwide technology survey. (2001, February). *Hotels*, 35, 78-94.
- How Many Online, (2000). NUA. [On-line]. Available: http://www.nua.ie/surveys/how_many_online/index.html.
- Jeong, M. & Lambert, C. U. (1999). Measuring the information quality on lodging web sites. *International Journal of Hospitality Information Technology*, 1(1), 63-75.
- Kasavana, M. L. & Cahill, J. J. (1997). *Managing computers in the hospitality industry*. Educational Institute of the American Hotel and Motel Association. East Lansing, Michigan 48826. chapter 1, p24. chapter 4, 108.
- Kirk, D. & Pine, R. (1998). Research in hospitality systems and technology. *International Journal of Hospitality Management*, 17, 203-217.
- Korgaonkar, D. K. & Wolin, L. D. (1999). A multivariate analysis of web usage. *Journal of Advertising Research*, 39(2).
- Lambert, C. U. & Riegel, C. D. (1992). Information technology: A critical force for the 1990s. *Hospitality Research Journal*, 17(1), iii-iv.
- Lieb, J. (1999). 1999 U.S./Canada Internet Demographic Study. CommerceNet. [On-line]. Available: <http://www.commerce.net/research/stats/analysis/99-USCanda-study.pdf>

- Lin, J. C. & Lu, H. (2000). Towards an understanding of the behavioral intention to use a web site. *Journal of Information Management*, 20, 197-208.
- Marcussen, C. H. (1997). Marketing European tourism products via Internet/www. *Geography and Tourism marketing*, 6(3/4), 23-34.
- Martinez, M. J. (1998). Who are Internet users? [On-line]. Available: <http://abcnews.go.com/sections/tech/DailyNews/wwwsurvey980714.html>.
- Meidan, A. & Chiu, H. L. (1995). Hotel reservation methods-a discriminant analysis of practices in English hotels. *International Journal of Hospitality Information Technology*, 14(2), 195-208.
- Murphy, J., Forrest, E., Worthing, C., & Brymer, R. (1996). Hotel management and marketing on the Internet. *The Cornell Hotel and Restaurant Administration Quarterly*, 37(3), 70-82.
- O'Connor, G. C. & O'Keefe, R. (2000). The Internet as a new marketplace: Implications for consumer behavior and marketing management. *Handbook on Electronic Commerce*. Springer. Chapter 6. 123-145.
- O'Connor, P. & Horan, P. (1999). An analysis of web reservation facilities in the top 50 international hotel chains. *International Journal of Hospitality Information Technology*, 1(1), 77-85.
- Powers, T. F. (1992). The advent of the megachain: A case of the emperor's new clothes. *Hospitality Research Journal*, 15(3), 1-11.
- Sussmann, S. & Baker, M. (1996). Responding to the electronic marketplace: Lessons from destination management systems. *International Journal of Hospitality Management*, 15(2), 99-112.
- The Dollar Divide Demographic Segmentation and Web Usage Patterns by Household Income. (2000). MediaMetrix. [On-line]. Available: <http://mediametrix.com/press/releases/20000821.jsp?language=us>
- Travel Industry Association of America. (1997). Travel agencies still preferred source for travel information. [On-line]. Available: <http://www.tia.org/travel/summinternet97.asp>
- Travel Industry Association of America. (1999). Use of the Internet among travelers. [On-line]. Available: <http://www.tia.org/travel/summtatra99.asp>
- Vallen, G. K. & Vallen, J. J. (1996). *Check-in Check-out*. Prentice Hall. Upper saddle river, New Jersey 07458. p423. p417

- Van Hoof, H. B., Collins, G. R., Combrink, T. E., & Verbeeten, M. J. (1995). Technology needs and perceptions. *The Cornell Hotel and Restaurant Administration Quarterly*, 36(5), 64-69.
- Van Hoof, H., & Combrink, T. (1997). U.S. lodging managers and the Internet. *The Cornell Hotel and Restaurant Administration Quarterly*, 39(2), 46-54.
- Van Hoof, H. & Verbeeten, M. J. (1998). HITA survey shows managers hesitant to jump on Internet speedway. *Hotel and Motel Management*, March 2, 43,52.
- Van Hoof, H., Rurys, H., & Combrink, T. (1999). Global hoteliers and the Internet: Use and perception. *International Journal of Hospitality Information Technology*, 1(1), 45-61.
- Van Hoof, H. B., Verbeeten, M. J., & Combrink T. E. (1996). Information technology revisited international lodging-industry technology needs and perceptions: A comparative study. *The Cornell Hotel and Restaurant Administration Quarterly*, 37(6), 86-91.

ACKNOWLEDGEMENTS

I would like to express gratitude to my major professor, Dr. Miyoung Jeong, for her patience, guidance, and support during the course of my graduate study. I would like to thank my co-major professor, Dr. Mary B. Gregoire, for her helpful suggestions and comments to my research. I would also like to thank my committee member, Dr. Troy J. Strader, for his insightful advice and help during my thesis work.

I would like to give thanks to all the people who have helped me with my study and life during the past two and half years. I would also like to thank my parents for their spiritual encouragement far away from my hometown.

Finally, I would like to thank my lovely wife, Yu Lin, for her love and support. Without her, I wouldn't accomplish my goals.